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Agricultural Memorandum No 879

Simulated foot and mouth disease outbreak

by J Gloster

1. Introduction

An exercise, a response to a simulated outbreak of foot and mouth disease, and carried out under the control of the Ministry of Agricultural Fisheries and Food (MAFF), Tolworth, was held on 23rd January 1980.

The object of the exercise was to familiarise all of the relevant staff with the required procedures and to test these procedures under operational conditions.

2. The exercise

The details of the assumed outbreak are listed in Appendix 1. In brief there was taken to be a confirmed outbreak of foot and mouth disease at the Berkshire College of Agriculture, near Maidenhead, Berkshire. Thirty pigs and one cow were assumed to have clinical signs of the disease.

Staff during the exercise were deployed to three centres; Tolworth, the site of the outbreak at Burchetts Green and the Divisional Veterinary Offices (MAFF), Reading.

3. Meteorological Office procedure in the event of an outbreak of foot and mouth disease

On notification of an outbreak of the disease, the Meteorological Office is required to perform three tasks and each of these were tested during the exercise:-

(1) Provide a wind sector analysis for the period immediately prior to the outbreak. This is required as quickly as possible in order that the areas for secondary infection may be ascertained. For full details of which section of the Meteorological Office is responsible for the provision of these data see Public Services Handbook Chapter 11.~~10~~ 08 and Agricultural Memorandum No 851.

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(2) Supply one HSO or above, who is familiar with the epidemiology of foot and mouth disease, to become part of the Epidemiology team. The meteorologist's role as a member of this team is to advise the team leader on the meteorological conditions that have influenced or are still influencing the airborne spread of foot and mouth virus.

(3) Make available two ASO/SO's to take additional weather observations near to the site of the outbreak if the normal meteorological data are inadequate. Met O 10 have a list of volunteers who are prepared at short notice to undertake these duties for periods of up to three weeks.

4. Wind Sector Analysis

The London Weather Centre was asked, on the morning of the 23rd, to provide the required wind sector analysis. Initially they were unaware of their obligation as laid out in Public Services Handbook Chapter 11.~~10~~08. After a time delay of five hours the required information was passed by telephone to Met O 8a, Bracknell. It might be expected that the London Weather Centre, because of its many operational requirements, would take longer than the majority of the other main meteorological centres to perform this analysis and this proved to be the case in this exercise. Many of the other centres have been tested when suspected outbreaks of foot and mouth disease have arisen over the past few years and they have usually managed to perform the analysis within one or two hours. However, the delay that occurred during this exercise would be just about acceptable in the case of a real outbreak of the disease. It is hoped that once a real case of foot and mouth disease had been identified, the situation would impart some urgency to the analysis.

5. Epidemiology team

The Epidemiology team consisted of Mr Dene (Regional Veterinary Officer, Chichester), Dr Hedger and Dr Donaldson (Animal Virus Research Institute, Pirbright) and Mr J Gloster (Met O 8a, Bracknell).

The teams task was to analyse the outbreak in terms of amount of virus that had been excreted by the diseased animals and then to predict the possible spread

of the disease by the airborne route.

In this particular case the wind sector analysis, for the antecedent period showed that windborne infection could have taken place in all directions except for a small quadrant between 140° and 190°. The team reduced this large sector into areas of maximum risk by considering the wind directions when the virus production was at its height.

In general terms this was a highly successful part of the exercise; it was the first time that the three disciplines involved had been brought together in a realistic exercise. However, the exercise revealed two areas where improvements could be made. Firstly, the Meteorological Office is asked by MAFF Tolworth to supply the wind sector analysis for an antecedent period, typically 3-4 days ie the period when the diseased animals were possibly emitting virus in the aerosol form. However on many occasions this may only represent part of the story and if decisions are taken solely on the information from the recent past they may well be in error. This issue was clearly demonstrated in this present realistic exercise because the situation leading up to the identification of the outbreak resulted in the conclusion that the virus had been produced over two to three incubation periods; this took the emission period and the wind analysis required back over a period of about half a month.

Secondly, the Epidemiology team was asked to comment upon the spread of the virus and the risk of infection as a function of distance. This was difficult to ascertain because of:- (a) the diverse meteorological conditions that existed throughout the period and (b) the uncertainty in the accumulated exposure to virus concentrations from which one can infer that the animals will probably become infected. Advice on the likely spread of infection as a function of distance is very important because the decision to ring - vaccinate or not may well be influenced by the likely spread of the virus by the airborne route.

6. Erection of the mobile meteorological equipment

Met O 10 supplied two people to erect the mobile meteorological equipment, normally stored at Met O 4 Western Road, Bracknell. The equipment was taken by MAFF transport to the site of the outbreak, erected and tested.

7. Review of the exercise

It was agreed by all present at the subsequent debriefing that the exercise had proved invaluable and much had been learned by all parties.

8. Action proposed

(1) That the present operational system should be retained together with the requirement it lays on Branches other than Met O 8 for information about the recent past.

(2) That Met O 8a will develop computerised procedures to enable the wind sector analysis to be prepared at Bracknell for extended periods (see section 5).

(3) That Met O 8a, in collaboration with Met O 14 and the Animal Virus Research Institute, will pursue, as a matter of urgency the development of operational procedures to estimate 'downwind' virus doseage profiles and the accumulated challenge presented to the animals (see section 5).

Any comments or suggestions about this article should be referred to the author.

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March 1980

Appendix 1.

MINISTRY OF AGRICULTURE, FISHERIES AND FOOD

FOOT-AND-MOUTH DISEASE

PRELIMINARY REPORT—POSITIVE CASES

No. D.F. ..... DATE OF CONFIRMATION 23rd January 1980

FULL NAME AND ADDRESS OF OWNER. (If a dealer, so state.) — Mr J Pollard, Principal, Berkshire College of Agriculture, Hall Place, Burchetts Green, Maidenhead, Berks.

PLACE WHERE DISEASE HAS BEEN FOUND TO EXIST, STATING PARISH. (If on farm premises, give acreage of farm.) — College Small Holding O.S. SU832819, Hall Place, Burchetts Green, Maidenhead. Parish of HURLEY

	Bulls	Cows	Other Cattle	Sheep	Pigs	Goats
(1) Number and classification of stock on premises :						
(i) In buildings	1	100	-		750	
(ii) In fields		5	-			
Total	1	105	0	0	750	0
(2) Number affected :						
(i) In buildings		1			30	
(ii) In fields						
Total	0	1	0	0	30	0
(3) Number to be slaughtered :						
(i) In buildings	1	100			750	
(ii) In fields		5				
Total	1	105	0	0	750	0
(4) Number of above stock which are :						
(a) Pedigree (i) To be slaughtered ..	1	100				
(ii) Others		5				
Total	1	105				
(b) Attested or T.T.						
(i) To be slaughtered ..				—	—	—
(ii) Others				—	—	—
Total				—	—	—

FORM FM 1

(5) Description and history of animal or animals showing the oldest lesions, stating approximate age of lesions and describing oldest lesions. (*See footnote.*)*	4 year old Jersey cow in milk. Temp 105°F. Ruptured and unruptured vesicles on dorsum and edge of tongue. Ruptured vesicle, interdigital left fore foot. Unruptured outside of coronary band. Ruptured vesicle interdigital left hind foot and small R.V. on one teat. Lesions < 24 hrs old. See note attached with discription of lesions in pigs - general remarks refers.
(6) Has virus been sent to the Research Institute (Animal Virus Diseases), Pirbright, Surrey? If so, give date and time of despatch.	Yes. 11 a.m. on 23rd January 1980.
(7) What notices have been served on owner in respect of the infected premises? Give date and time of service of notices	(*a*) Form A 10 a.m. on 23rd January 1980 (*b*) Form D (*c*) Notice under Article 19 of Foot-and-Mouth Disease Order of 1928
(8) Do the fields or buildings occupied by affected stock adjoin a highway, river, stream or canal?	Footpath runs through piggery
(9) Give particulars of stock on land contiguous to the infected premises, stating whether detention notices (Form D) have been served by Local Authority or by an Inspector of the Ministry.	No contiguous
(10) Valuable pedigree herds/flocks in the vicinity, with distances from infected premises	Owners other Friesian herd (Pedigree) See Q.11 below.
(11) Give addresses of other farms or premises in the same occupation as the infected premises, stating:	Hall Place Farm
(*a*) Approximate number of stock.	194 Friesians
(*b*) Distance from the infected premises.	⅔ mile
(*c*) Whether separate staff is provided.	Not completely separate - Farm Manager is a regular link between the two also movement of foodstuff.
(*d*) Whether detention notices (Form D) have been served by Local Authority or by an Inspector of the Ministry.	Form D to be served

(12) Give details of movements of animals: (*a*) On to the infected premises. (*b*) Off the infected premises. (Such movements to include breeding movements and to cover a period of not less than 21 days prior to first symptoms of disease. Dates of movement, number and description of animals moved, and places of origin and destination to be given.)	(*a*) Movements ON (*b*) Movements OFF (1) One fresh calved Jersey heifer sold at Reading Market on 22/1/80. (2) 9/1/80 20 fat pigs to Alf Meades Abattoir in Reading - see Q.33 - origin.
(13) Visits of persons, including veterinary surgeons, inseminators, dealers, castrators, other stockowners, threshers, etc., giving dates.	1. Owners veterinary surgeon attended milk fever case on Sunday 20th January. F.R. 2. Visit by inseminator from Shinfield C.B.C. on 18th January. F.R.
(14) Visits of owner, his family or his employees to markets, fairs or other premises where stock is kept.	1. Owner visited Reading Cattle Market on 22nd January 1980. 2. Owner and Family visited farming friends on 20th January 1980. F.R.
(15) Give names and addresses of employees working on the infected premises who keep stock, stating approximate number and classification of stock and whether detention notices (Form D) have been served.	None

(16) Give the numbers of dogs, cats, poultry, pigeons, etc., on the infected premises. Have arrangements been made to confine them ?	2 dogs and several cats. Yes
(17) Disposal of milk and milk churns—how and by whom collected and delivered.	By tank. Tanker collects from dairy without entering stock area. (Daily)
(18) Source of water supply to the affected animals.	Mains water supply
(19) Is liquid manure allowed to drain on to a public highway or through other stockowners' lands ? If so, what steps have been taken to prevent spread of infection by this means ?	No
(20) Feedingstuffs and litter purchased or moved on to the infected premises during 21 days prior to and since first symptoms of disease—indicating whether any has been used for the affected stock.	None
(21) Feedingstuffs and litter moved off the infected premises during 21 days prior to and since first symptoms of disease.	Load f hay (baled) sold to Henry Pocock, Mann's Hill, Burghfield Common on 15.1.80

(22) Manures and slaughterhouse offals moved on to or off the infected premises during 21 days prior to first symptoms of disease.	None
(23) Sacks moved on to or off the infected premises during 21 days prior to first symptoms of disease.	None
(24) Have imported meat wrappers been found on the infected premises ?	No, but empty corned beef tin found near piggery marked Establishment No. 2 Argentina
(25) Are the infected premises rat-infested ? If so, state what action has been taken to exterminate the rats.	Some rats but rodent control quite effective
(26) Are there hedgehogs in the vicinity of the infected premises ? If so, have any been sent to the Research Institute (Animal Virus Diseases), Pirbright, Surrey ?	Yes None caught yet F.R.
(27) Are there any rubbish dumps in the vicinity of the infected premises ?	No
(28) Are any of the stock fed on swill ? If so: (*a*) State whether the swill is boiled. (*b*) Describe the materials of which the swill consists, indicating also the sources of supply of the materials. (*c*) Is the boiling plant licensed ?	No

(29) What is the method of disposal of household refuse ?	Dustbin, but edible scraps fed to dogs
(30) What arrangements have been made to enforce the observance of the rules relating to infected premises ?	Access points closed except for main gate. Police officer on duty and Infected Place notices served. Disinfectant straw mat across entrance.
(31) Has action been taken under Article 6 of the Foot-and-Mouth Disease Order of 1928 ?	
If so, give date and hour of:	
(*a*) Application of emergency restrictions.	23/1/80 10.15 a.m.
(*b*) Visit of Veterinary Inspector.	23/1/80 9.30 a.m.
(*c*) Withdrawal of emergency restrictions.	
(32) Do any public footpaths pass through the infected premises ? If so, state action taken to control their use.	A footpath passes through the piggery. To be closed immediately.
(33) Origin	On 9/1/80 a haulier, Gray of Finchampstead collected the last 25 pigs from a swill feeder. Mr. Bishop, Warren Farm, Maidenhead Road, Wokingham, and next with same lorry called at College small holding (I.P.), entered piggery area and collected 20 fat pigs. Whole consignment went to Alf Meade's abattoir in Reading.

GENERAL REMARKS

Subsequent to diagnosis of FMD in the one Jersey cow it was found that 30 pigs affected with Foot and Mouth Disease. Oldest lesions in one sow approximately 6 days old.

NOTE.—This form is to be used only in positive cases and is to serve the purpose of a preliminary report. It should be completed and sent to Head Office on the day of confirmation or, at the latest, the following day. A full report on the outbreak should be sent on Form FM22 in accordance with para. 97 (i) of Inset 3 of Instructions.

Signature of Veterinary Officer.....

Date 23/1/80 19.....